

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11851 (1986): Method of evaluation of acceleration of automotive vehicles [TED 4: Automotive Braking Systems]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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*Indian Standard***METHOD OF EVALUATION OF ACCELERATION OF
AUTOMOTIVE VEHICLE**

1. Scope — Gives the method of evaluation of acceleration of automotive vehicle such as truck, bus, car, and jeep.

2. Features of Test Track

2.1 The test track shall be a roadway, clear, smooth, dry, covered with asphalt, concrete or similar material. The longitudinal slope shall not exceed 1 percent and the lateral slope shall not exceed 3 percent in the straight portion. Also the difference in altitude between any two points on the track shall not exceed one metre.

2.2 The test track shall allow a steady speed to be maintained. It shall be in a straight line or form a closed circuit with at least 2 000 m in length and having a minimum radius of 200 m.

2.3 The measuring stretch of track shall have adequate length on either ends for the purposes of achieving the test speed and stopping the vehicle at the end of the trial.

3. Preparation of Vehicle

3.1 The vehicle shall conform in all its parts, components and systems to the design and/or production series as applicable.

3.2 The vehicle shall be run-in as per the manufacturer's recommended practice.

3.3 The adjustments of fuel system; ignition system; grade, quality and quantity of lubricants for the various moving parts; adjustment of brakes; clutch; idling speed, etc, shall conform to the manufacturer's recommendation.

3.4 Before test the vehicle including all its parts, components and systems shall have reached a stable temperature normal to the vehicle operation.

3.5 All the fuel enrichening devices other than those required for normal working of the vehicle shall be made inoperative.

3.6 The vehicle shall be loaded to the maximum total weight specified by the manufacturer and load distribution between the axles shall be as per the manufacturer's specification.

3.7 The vehicle shall be fitted with tyres which have not covered more than 10 percent of their expected life. The tyres shall be inflated to the pressure recommended in IS : 10914 (Part 2)-1985 'Specification for pneumatic tyres for automotive vehicles: Part 2 Truck, bus, light truck tyres — diagonal ply' and IS : 10914 (Part 3)-1985 'Specification for pneumatic tyres for automotive vehicles : Part 3 Passenger car tyres — diagonal ply' corresponding the maximum total weight specified by the manufacturer. The tread depth measurement may be used to assess the tyre life.

3.8 During testing all the windows of the cabin shall be closed and overhead ventilating system/hatches where provided shall be lowered, other than required for instrumentation purposes.

4. Test Conditions

4.1 Atmospheric Conditions — Shall be as under:

- a) Atmospheric pressure 86 to 106 kPa;
- b) Temperature 288 to 308 K;
- c) Relative humidity 45 to 75 percent;
- d) Maximum wind speed 3 m/s (in any direction); and
- e) Maximum wind speed for gusts, 8 m/s.

4.1.1 If the conditions at testing are different from those given in 4.1, the values shall be corrected to standard conditions.

4.1.2 Air density — When the vehicle is tested air density as described in 4.1.2.1 shall not differ by more than 7.5 percent from the air density under reference conditions.

4.1.2.1 The air density shall be calculated from the formula:

$$d_T = d_o \times \frac{H_T}{H_o} \times \frac{T_o}{T_1}$$

where

d_T = air density at test conditions,

d_o = air density at reference condition (0.9197),

H_T = atmospheric pressure at test site expressed in kPa,

H_o = atmospheric pressure at reference conditions kPa,

T_o = temperature at reference condition 298 K, and

T_1 = atmospheric temperature at the test site expressed in Kelvin.

4.2 Other Conditions/Features — It is recommended that conditions and safety features given in 4.2.1 to 4.2.3 shall be observed during the test.

4.2.1 The head lights, parking lights and the emergency flasher lights (where applicable) shall be kept operative during the trial.

4.2.2 The test vehicle shall carry a board prominently placed, indicating that the test is in progress.

4.2.3 Fitment and operation of all instruments shall be such as not to hamper the visibility or freedom of the driver to have proper control of the vehicle at all times.

5. Evaluation of Acceleration

5.1 The acceleration performance shall be expressed as the time taken in seconds:

- a) to cover a distance of 1 000 m from start or
- b) to achieve speed of 90 kmph or to the nearest multiple of 10 kmph to the maximum speed, whichever is less.

5.2 The engine, at the starting point of the measuring strip or track shall be run at the low idling speed as specified by the manufacturer. The centreline of the front wheel of the vehicle shall coincide within the starting point of the measuring strip if distance measurement is based on fixed marks on the track. If instruments such as fifth wheel or opticle devices are used for the measurement of distance the location points of such instruments shall be taken as references instead of the front wheel.

5.3 Starting gear shall be as per manufacturer recommendations and the vehicle shall be accelerated to achieve speed in shortest duration in different gears and gears shall be changed for different speeds as recommended by the manufacturer and shall be recorded in the test report.

5.4 The time taken to cover the distance or to achieve the speed as per 5.1 shall be established within ± 0.7 percent of the measured time.

5.5 The test shall be repeated in opposite direction.

5.6 The acceleration performance shall be equal to the arithmetic average of time taken for 6 readings (3 each in either direction) which do not differ by more than ± 5 percent from mean expressed in seconds rounded off to the nearest second place of decimal.

5.7 For the purposes of detailed analysis, the tests may be conducted for distances starting from 100 m and increased in steps of 100 m and speeds similarly from 10 kmph onwards in steps of 10 kmph each.

EXPLANATORY NOTE

The overall performance of an automotive vehicle is a function of performance of its various components, systems, instrumentation, etc. Acceleration of an automotive vehicle is an important parameter of its performance. This standard for evaluation of acceleration of automotive vehicles is an attempt to provide a method for measuring this parameter on uniform basis.

For measurement of acceleration of scooters and motorcycles reference may be made to IS : 10407-1983 'Method of evaluation of acceleration performance of scooters and motorcycles'.